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AGO A/D ltr, 29 Apr 1980; AGO D/A ltr, 29 Apr 1980

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DEPARTMENT OF THE ARMY
OFFICE OF THE ADJUTANT GENERAL
WASHINGTON, D.C. 20310

IN REPLY REFER TO

AGDA (M) (28 Sep 70) FOR OT UT 702262 6 October 1970

SUBJECT: Operational Report - Lessons Learned, Headquarters, 538th Engineer Battalion for Period Ending 30 April 1970 (U)

"THIS DOCUMENT CONTAINS INFORMATION AFFECTING THE NATIONAL DEFENSE OF THE UNITED STATES WITHIN THE MEANING OF TH. ESPIONAGE LAWS, TITLE 18, U. S. C., SECTION 793 AND 794. ITS TRANSMISSION OR THE REVELATION OF ITS CONTENTS IN ANY MANNER TO AN UNAUTHORIZED PERSON IS PROHIBITED BY LAW."

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1. Subject report is forwarded for review and evaluation in accordance with paragraph 4b, AR 525-15. Information of actions initiated as a result of subject report should be forwarded to ACSFOR OT UT within 90 days of receipt of covering letter.

2. Information contained in this report is provided to insure appropriate benefits in the future from lessons learned during current operations and may be adapted for use in developing training material.

BY ORDER OF THE SECRETARY OF THE ARMY:

Kenneth G. Wickham

KENNETH G. WICKHAM
Major General, USA
The Adjutant General

1 Incl
as

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DEPARTMENT OF THE ARMY
Headquarters, 538th Engineer Battalion (Construction)
APO San Francisco 96232

THCON-AOP 30 April 1970

SUBJECT: Operational Report of the 538th Engr Bn (Const) for the Period Ending 30 April 1970 RCS CSFOR-65 (RI) UIC WBAN AA

THRU Commanding General, United States Army Support, Thailand, ATTN: THOP-OP APO 96233

Commander in Chief, United States Army Pacific, ATTN GROP-DT APO 96558

TO: Assistant Chief of Staff for Force Development, Department of the Army, Washington, D. C. 20310

1. OPERATIONS: SIGNIFICANT ACTIVITIES

a. Mission:

(1) The 538th Engineer Battalion (Construction) MTOE 5-1115E PO P00269, presently participating in Operation BANNER STAR, (See Inclosure 10) has executed and completed all of the following assigned construction missions in the Sattahip area:

(A) Construction of the Camp Samae San Cantonment and Depot Complex near Sattahip, Thailand.

(B) Selected MCP construction projects for the U.S. Air Force at U-Tapao Royal Thai Naval Air Station

(C) Selected civic action projects.

(D) Construction support missions for neighboring units in the area, as directed.

b. Location: The 538th Engineer Battalion is located at Camp Samae San near Sattahip, Thailand (see Incl 1 & 2). Company D of the Battalion was engaged in Military Construction Program (MCP) construction projects at U-Tapao Royal Thai Naval Air Station (RTNAS) (Incl 3), in addition to projects at Camp Samae San.

c. Organization: The 538th Engineer Battalion (Construction) accomplished its assigned missions utilizing the organization reflected in Incl 4. Officers currently assigned to the Battalion are listed in Incl 5.

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702262
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d. Significant Activities:

(1) MCA Construction Mission, Camp Samae San, Thailand: The troop construction portion of the Camp Samae San Cantonment and Depot Complex was completed this quarter. The scope of this mission involved the following categories of effort:

(A) Vertical Construction: Vertical building construction in the Camp Samae San Cantonment Area, Depot Complex and Facilities Engineer Complex comprised the major portion of the Battalion's operations for this reporting period. The majority of the facilities constructed were semi-permanent structures of concrete block, bolted timber trusses, corrugated asbestos-cement roofing, hardwood doors, and permanent glass windows, while other structures were pre-engineered steel buildings modified to meet the buildings intended use. All of the facilities have finished interiors to include accustical ceiling treatment, ceramic tile walls and floors, quarry tiled kitchens and other special treatments as required. Structures have complete latrine facilities and electrical wiring and some are equipped with air-conditioning. The Battalion completed 627,540 square feet of vertical construction at the Cantonment and Depot Complex valued at $ 3,693,306.75. A plan layout depicting that portion constructed by the 538th Engineer Battalion (Construction) is attached as Incl 6. Table I provides a listing of vertical construction projects completed by the Battalion in the Cantonment, Depot, and Facilities Engineer Areas.

TABLE I
538th Engineer Battalion (Construction)
Completed Vertical Construction, Camp Samae San, Thailand

No. of Bldg's	Description		Cost
55	EM Billets, 28 man	$	983,885.41
6	Double Company HQ's Bldg's		134,237.51
2	Mess Halls, 750 man		139,071.84
6	Motor Maintenance Bldgs		91,470.00
16	BOQ's		384,606.96
1	USO Club		36,966.40
1	PX Pascoe (Interim)		19,577.80
1	Fire Station &		32,840.00
5	30'X60' Pascoe Bldg's		48,927.76
4	40'X100' Pascoe Bldg's		53,333.12
7	100'X200' Pascoe Bldg's		217,000.00
1	Thai Security Guard Mess Hall		19,891.12
1	Thai Security Guard Dayroom		9,122.00
1	Thai Security Guard Admin Bldg		18,190.40
11	Thai Security Guard Billets		197,777.06

No. of Bldg's	Description	Cost
1	Quartermaster Sales Store A/C	$ 23,571.67
1	Library A/C	42,629.82
1	Signal Bn HQ Bldg	19,578.31
1	Signal Bn HQ Bldg Extension	5,772.19
1	POL Laboratory (Deep Water Port)	27,852.79
1	APO Bldg	32,204.72
1	Finance Bldg A/C	35,828.38
1	Provost Marshal Office Bldg	64,695.21
1	Facilities Engr Admin Bldg	38,835.32
1	CSA Latrine (960 sq ft)	11,512.66
1	Dial Control Bldg	38,830.00
1	Depot HQ's Bldg w/Ext A/C	164,481.00
1	ADPS Bldg A/C	43,821.00
1	Chapel	80,802.11
1	Craft Shop A/C	20,527.68
1	Area HQ's Bldg	40,758.26
11	Dayrooms	63,435.35
1	Pipe/Lumber Storage Bldg	6,094.00
1	Flammable Storage Bldg	6,229.40
1	Main PX/Snack Bar	87,419.86
1	Ration Breakdown Bldg	26,277.89
1	Roofer Dock	17,410.18
1	Self Service Supply Center	7,601.95
1	S-4 Warehouse	29,643.01
1	Material Handling Equipment Repair & Maintenance Facility	17,523.62
1	POL Disp Pt (less storage tanks)	51,728.24
1	Stock Control Bldg	39,285.60
1	Dispensary	59,280.00
156	Total Buildings	$ 3,693,306.79 *

* This Total Cost includes $718,234.54 of unfunded GI Labor Costs.

(i) Company A (Equipment and Maintenance) continued to support the Battalion's effort by supplying batch plant concrete to the line companies on request. During this period 2776 cubic yards of concrete were mixed for a total quantity to date of 6075 cubic yards. The batch plant closed operations on 31 March 1970.

(ii) Company B completed the Post Exchange and Snack Bar building which provides 15,600 sq. ft. for a retail store, warehouse, concessions area, and snack bar. The electrical system in the building is quite sophisticated due to the large quantity of lighting fixtures installed and the size of the equipment that will be in the kitchen area. The exterior lights are controlled by a photo-cell switch designed to turn the lights on

at dusk and off at dawn. A 60'X140' Reefer Dock was constructed in the ration breakdown area. Three hundred and fifty (350) cubic yards of concrete were used to construct the dock and retaining wall which functions as a loading dock. A pre-engineered metal Pascoe building was erected for the Self Service Supply Center (SSSC) facility. This 30'X60' structure has an office and two large storage areas. Seventeen hundred and fifty (1750) feet of sidewalks were poured around the Chapel, Library, Theatre, and Craft Shop area (see Table IV). In the BOQ area an outdoor handball court was constructed with plastered interior walls providing a smooth playing surface. (See Incl 8 thru 14 for project photographs). Company B was also engaged in other athletic facilities (see para. (D) (ii) pg. 7).

(iii) Company C completed three buildings this quarter. An 80'X100' Pascoe supply warehouse and a 60'X140' ration breakdown warehouse also of Pascoe manufacture were constructed in the Post S-4 Area. Each building has offices, latrines, and ample storage space inside and fenced hardstands outside. A maintenance facility for the Thailand Army Depot's materials handling equipment was completed in the Consolidated Supply Activities (CSA) area. It contains two bays and a grease pit, together with an office, parts room and storage room. The POL Dispensing Point was completed with the exception of two 1000 barrel bolted steel tanks which as of this date have not arrived in country. This facility has 4 gas pumps, two mogas and two diesel, on a wall lighted concrete island. The 5' high berms around the tanks are concrete lined. All electrical work in and around the island was installed for a class I hazardous location as per the electrical code. Six thousand (6000) feet of sidewalks were placed in the BOQ areas and around the USO and interim PX (see Table IV). In addition a 80'X24' patio was poured on one side of the USO. (see Incl 15 thru 23 for project photographs).

(iv) Company D completed seven dayrooms this quarter. Each dayroom is a 20'X42' concrete block building and contains ceiling fans and wiring for future air-conditioning. Company D was also engaged in construction of athletic facilities (see para. (D)(ii) pg. 7) and MCP construction at U-Tapao RTNAS. (see para (2) pg. 8), (see Incl 24 for project photographs).

(B) Horizontal Construction: The horizontal construction mission of the Battalion during this reporting period involved filling the remaining low areas throughout the Cantonment and Depot Complex areas in conjunction with the completion of the comprehensive area drainage system. In addition, earthfill was placed in preparation for the Athletic Facilities. A total of 132,788 cubic yards of earthfill were hauled during the quarter, bringing the grand total to 2,568,413 cubic yards of fill placed at Camp Samae San. The total cost of the horizontal construction to include earthfill, paving operations culvert installation and drainage construction was $3,159,245.00.

TABLE II
536th Engineer Battalion
Completed Horizontal Construction, Camp Samae San, Thailand

Project	Scope	Approx Cost
Earthfill for horizontal construction to include roads, parking, and hardstands	2,568,413 cu yds	$2,771,890.00
Paving Roads	32,595 sq ft/ 6.17 miles	111,504.00
Paving of hardstands and parking areas	1,393,760 sq ft	189,038.00
Drainage structures	21.77 miles/ 184 culverts	86,813.00
	TOTAL COST	$3,159,245.00*

* This total cost includes $1,628,902.00 of unfunded GI labor costs.

(i) Company A continued to work on drainage ditches in the CSA area during this period. Laterite borrow pit operations were terminated on 31 March 1970. A total of 139,500 cubic yards of fill was provided during this period. Forty-three hundred (4300) sq yds of hardstand for parking lots and driveways were prepared by Company A for double bituminous surface treatment. 6th Avenue Extension and Mountain Drive were sprayed with RC-3 for dust control purposes.

(ii) Company B hauled a total of 77,600 cubic yards of material this quarter to fill the 6800, 7300, 7800, and 7900 areas and to bring 6th Avenue Extension and Mountain Drive up to grade. Two pads were built for volleyball/basketball courts in the 6500 and 7900 areas. Parking lots in the 6900 area were prepared for priming with RC-3. Drainage swales and culverts were also installed. Extensive landscaping was done around the PX/Snack Bar, SSSC, Dispensary, and Chapel. (See Incl 25 for project photograph.)

(iii) Company C hauled 15,000 cubic yards of laterite into 7700 area and 10,000 cubic yards into the 6700 area during this reporting period. At the Deep Water Port, 50,000 cubic yards of fill were moved to level a hardstand area of 880,000 sq ft for use as a trailer transfer point. The area was previously used as a dump for refuse and dredging spoil. The scope of the project involved clearing the area of refuse,

leveling the area by cut and fill methods, and finally seeding the area with pneumatic-tired rollers to improve drainage and run off. (See Incl 26 for project photograph).

(iv) Company D placed 20,900 cubic yards of fill in the 7200 area and 1600 cubic yards in the 7100 area for both landfill and drainage purposes. In addition, extensive landscaping was done to improve the appearance of the areas. In the CSA area 21 rip-rap type headwalls were installed to reduce the erosion of the slopes near the culverts. (See Incl 27 thru 29 for project photographs).

(C) Utilities: The installation of the all primary utilities systems at Camp Samae San was completed this quarter. All programmed main and secondary lines in the potable water system and waterborne sewage and treatment system have been installed. The 12,000 volt primary electrical distribution system, transformer banks, and secondary wiring to all buildings at Camp Samae San have been completed. Table III below summarizes the utilities construction at Camp Samae San.

TABLE III
538th Engineer Battalion (Const)
Completed Utilities Construction, Camp Samae San, Thailand

Utility System	Scope	Approx Cost
Potable water distribution	27,842 lf and 37 fire hydrants	$ 373,710.13
Water-borne sewage collection and treatment	35,300 lf of sewer line, 13 acre sewage lagoon and 6 lift stations	410,520.16
Primary/Secondary Electrical Dist	37,800 lf of 12,000 volt transmission lines and 38 transformer banks	141,535.25
	TOTAL COST	$ 925,765.59 *

* This total cost includes $444,084.40 of unfunded GI labor costs.

(D) Special Construction

(i) Security Fencing: Camp Samae San and the Depot Complex are now inclosed with approximately 7.6 miles of chain link and barbed wire security fence.

(ii) Athletic Facilities: During this period Company B completed the permanent athletic facilities to include: a football-soccer-track complex; 2 softball fields with backstops, dugouts, bleachers and outfield fences; and, a double outdoor basketball court. The facilities are located in a central area adjacent to the gymnasium. In addition, four combination volleyball-basketball courts were constructed in other locations at Camp Samae San. Three of these courts were constructed by Company D in three of the company troop billet areas and one court was constructed by Company B in the Thai Security Guard Area. A softball field and an outdoor handball court were also constructed by Company B in the vicinity of the Bachelor Officer Quarters. Table IV outlines the special construction projects which have been completed by this Battalion. (See Incl 30 thru 36 for project photographs).

TABLE IV
538th Engineer Battalion (Const)
Completed Special Construction, Camp Samae San, Thailand

Project	Scope	Cost
Security Fencing	7.6 miles	$ 164,945.43
Athletic Facilities	2 ea softball fields w/ backstops, fences, dugouts, and bleachers (7300 area)	
	1 ea double basketball court (7300 area)	
	4 ea combination basketball-volleyball (7100,7200,6800, 7900 areas)	
	1 ea outdoor handball-squash court (6500 area)	58,236.31
	1 ea football-soccer-track field w/bleachers	
	Parking facilities	
	1 ea softball field w/ backstop (6400 area)	

Project	Scope	Cost
Sidewalks	7750 feet (Troop training)	- - - -
	TOTAL COST	$ 223,181.74 *

* This total cost includes $49,213.05 of unfunded GI labor costs.

(2) MCP Construction U-Tapao RTNAS: On 1 October 1969 Company D, assumed the responsibility for selected US Air Force MCP Construction projects at U-Tapao Royal Thai Naval Air Station (RTNAS). All assigned projects were completed by 31 March 1970. Table V below summarizes the MCP construction at U-Tapao. (See Incl 37 thru 39 for project photographs).

TABLE V
Company D, 538th Engr Bn (Const)
Completed MCP Construction, U-Tapao RTNAS

Project	Scope & Description	Cost
Aircraft Revetments	ARMCO Steel earthfilled 130' long, 7.7' wide and 10' high	$ 16,510.16
Air Rescue Facility	50'X100' Butler pre-engineered steel building w/concrete floor and rough utilities	11,542.14
Bailey Bridge	90' DS M2 Bailey (Panel) Bridge w/ 30' sand bagged abutments	4,108.75 (labor only)
Guard Towers	21 new and 6 renovated Security Guard Towers, 27' high, bolted timber, w/64 sq ft observation platform having small arms protection and emergency exit	22,000.00
Perimeter Road	6.6 mile road w/18' roadbed, 28 culverts, and 300 ft wide cleared area.	112,459.64
	TOTAL COST	$ 166,620.69 *

* This total cost includes $52,369.20 of unfunded GI labor costs.

(3) Civic Action Projects: Civic action continues to be of command interest in the activities of the Battalion. During this reporting

period the 538th participated in small area projects and medical treatment of Thai Civilians.

(4) Area Construction Support Missions: During this reporting period the 538th Engineer Battalion continued to provide construction support to neighboring units in the area. A total of 574 cubic yards of concrete from the central batch plant were provided for local self-help projects. Engineer equipment augmentation and technical assistance were rendered to the local units as required.

(5) Operation CLEAN SWEEP: Equipment and supplies identified as excess to the needs and authorization of the Battalion are being turned in to receiving points as stated in the USARSU/THAI CLEAN SWEEP directives. To date, excess supplies valued at $475,000 have been turned in.

(6) Operation BANNER STAR: This Battalion is presently participating in Operation BANNER STAR under the provisions of U.S. Army Support, Thailand Confidential Letter of Instruction, THOP, SUBJECT: LOI for Operation "BANNER STAR", dated 1 December 1969. See Confidential Inclosure 40.

2. Lessons Learned: Commanders Observations, Evaluations, and Recommendations.

a. Personnel

(1) Battalion Disposition

(A) OBSERVATION:

(i) Present distribution of the enlisted grades in the Battalion is as follows:

	E2	E3	E7	E6	E5	E4	E3/1	TOTAL
AUTH	1	8	27	56	175	454	141	862
ASGD	1	9	27	34	122	407	118	718
PDY	1	6	27	33	109	390	67	645

(ii) Present distribution of the officers and warrant officers in the Battalion is as follows:

	OFFICERS	WARRANT OFFICERS
AUTH	33	10
ASGD	29	6
PDY	28	6

(iii) There are no critical MOS Shortages to report this period due to the completion of the Battalion's construction mission and the Battalion's current Banner Star Status.

(iv) The following officers arrived in the command this quarter.

RANK	NAME	TITLE
2LT	Berard, Thomas	Asst S-4
CW3	Dixon, Arthur	Personnel Officer
CW3	Wilson, Fred	Maint. Sect. Ldr. Co B

(B) EVALUATION: During the past quarter, the 538th Engineer Battalion (Construction) continued to operate at approximately 90% of its authorized enlisted strength.

(C) RECOMMENDATION: That emphasis be placed by higher headquarters on the timely reassignment of 538th Engineer Battalion (Construction) personnel in order to insure that the Battalion remains on its present BANNER STAR schedule. The efficient accomplishment of in-country reassignments for the 538th Engineer Battalion (Construction) personnel will require close and constant coordination with higher headquarters.

b. Intelligence: None

c. Operations

(1) Rip-rap vs Headwalls Construction

(A) OBSERVATION: Use of rip-rap construction rather than formed concrete headwalls was found to be an economical process.

(B) EVALUATION: On the U-Tapao perimeter security road project as well as in other areas within the scope of the Battalion's construction mission, it was determined that the use of the rip-rap construction technique to stabilize the ends of culverts was more advantageous than normal practice involving construction of formed concrete headwalls. The rip-rap technique involves a minimal amount of excavation to properly shape the area at the ends of each culvert followed by the placement of perimeter forms to contain the rip-rap construction. A dry mix is then used when pouring this contour slab to produce a neat and stabilized one. The rip-rap technique not only saves time and manpower but also reduces the tendency for erosion which normally occurs around the wingwalls of conventional headwalls. The only limitation to the use of these rip-rap culverts is that they are unsuitable in areas where the slope from the top of the culvert to the road grade

either too steep for the placement of concrete or too high (normally, optimum height is about 4 feet) to be placed in one pour.

(C) RECOMMENDATIONS: Consideration should be given to use of the rip-rap construction technique, wherever suitable, to provide stabilization protection for the ends of culverts.

(2) Multiple use of small pre-engineered buildings for large warehouses

(A) OBSERVATION: When time did not permit the procurement and construction of a 60'X140' concrete block warehouse, several pre-engineered Pascoe buildings were interconnected to provide the desired warehouse area.

(B) EVALUATION: Prior to the construction of the Ration Breakdown warehouse it was determined that there was insufficient time remaining in the construction program to procure the required items on the bill of materials and then to construct the planned concrete block warehouse building as originally scheduled. Consequently, it was recommended that this building be redesigned using available 30'X60' pre-engineered Pascoe buildings. The building was redesigned by USARSUPTHAI and after receipt of the plans the construction was completed in 48 working days. This is approximately one-third (1/3) the time it would have required for the construction of the same size concrete block structure.

(C) RECOMMENDATIONS: That the use of pre-engineered buildings, in suitable combinations, be considered for use as warehouse structures in lieu of the more time-consuming and expensive construction of concrete block structures.

(3) Plastering of the Handball Court

(A) OBSERVATION: Considerable difficulty was encountered developing the best technique and needed skills for plastering the 24 foot high interior walls of the outdoor handball court.

(B) EVALUATION: The requirement to plaster the interior playing walls of the outdoor handball court was a new and challenging experience for this Battalion. After several techniques were attempted, the following procedure was determined to be appropriate.

(i) Wet the wall down in areas of approximately 15 feet by 15 feet.

(ii) Place the mortar with bottom-to-top strokes (thickness varying from ¼" to 3/8") and allow to partially set up.

(iii) Scratch or rake the surface with a hand rake (24" piece of 1"X2" board with nails protruding through the other side by about 1/8").

(iv) Place final coat of mortar same as step (ii) and allow to partially set up. (½ hour in tropical climate).

(v) Screed with 4 to 5 foot hand screed insuring that the area is even.

(vi) Smooth after screeding using a wooden float with circular strokes. (Allow to set up).

(vii) Paint area with cement water slurry.

(C) RECOMMENDATIONS: That other construction units use similar plastering methods when confronted with this type of construction. In addition, when specifications require specialized construction techniques, guidance should be provided by the design agency with reference to the recommended construction procedure.

d. Organization: None

e. Training

(1) Vertical Construction MOS Skills

(A) OBSERVATION: The Local National work force provided necessary craftmanship in the vertical construction skills that the average MOS trained U.S. personnel lacked for the type of semi-permanent vertical construction accomplished by this Battalion at Camp Samae San.

(B) EVALUATION: The majority of the Local National (LN) construction workers had been employed by the Battalion for at least three years, during which time they developed as very competent skilled craftsmen in the vertical construction skills. The average U.S. soldier was assigned to the Battalion with MOS training in his particular field, but had little or no practical experience in the skill. The U.S. personnel experienced considerable difficulty in developing the needed experience by working with the LN craftsmen for several reasons: first, there was a definite language barrier; and secondly, the construction schedule did not provide sufficient time to permit on-the-job training. In addition, as a result of a constant shortage of NCO's, the inexperienced lower grade soldier was often required to function as the supervisor of the LN work force. This lack of experience and practical training became quite evident when the entire LN work force was

terminated due to Operation BANNER STAR, and U.S. personnel were required to complete several projects without LN assistance.

(C) RECOMMENDATION: When U.S. construction units are augmented by indigenous skilled and semi-skilled craftsmen, every effort should be made to insure that the skills of U.S. personnel are properly developed. The construction schedule should provide for the adequate on-the-job training of U.S. personnel. One technique which should be considered involves the use of some construction teams consisting of only LN workers and some construction teams consisting of only U.S. personnel. This type of project organization makes it mandatory to develop the appropriate skills within the available U.S. capability rather than relying primarily on LN effort.

f. Logistics: (See Incl 40 Operation BANNER STAR)

g. Communications: None

h. Material: None

i. Other: None

Bernard Hughes

BERNARD C. HUGHES
LTC, CE
Commanding

40 Incl
~~1- Location Map, Thailand~~
~~2- Unit Location Map~~
~~3- Area Map~~
~~4- Unit Organization~~
~~5- Officer Roster~~
~~6- Plan of Cantonment & CSA Areas Construction~~
~~7- Plan of U-Tapao RTNAS Construction~~
~~8-39 Construction Photographs~~
40- Operation BANNER STAR
Incls 1 thru 39 w/d HQ DA

THOP-OP (30 Apr 70) 1st Ind
SUBJECT: Operational Report of the 538th Engineer Battalion (Construction), Period Ending 30 April 1970, RCS CSFOR-65 (R2)

DA, United States Army Support, Thailand, APO 96233 1 JUL 1970

THRU: Commander in Chief, United States Army Pacific, ATTN: GPOP-DT, APO 96558

TO: Assistant Chief of Staff for Force Development, Department of the Army, Washington, D.C. 20310

The final Operational Report of the 538th Engineer Battalion (Construction) has been reviewed and is forwarded with the following comments:

a. Reference paragraph 2a(1). Action was taken and the *BANNER STAR* reassignment schedule was maintained.

b. Reference CONFIDENTIAL Inclosure 40:

(1) Paragraph 10 (U) a. Concur with the recommendation. Authorization for the turn-in of non-mission essential equipment will be standard instruction for similar activities in the future. The LOI of *BANNER STAR* will be changed accordingly.

(2) Paragraph 10 (U) b. Concur with the recommendation.

(a) Experienced gained from *BANNER STAR* will be utilized in similar operations.

(b) The *BANNER STAR* Control Center provided a single reference point for the problems encountered by units during the phase down operation. Constant liaison was maintained and technical inspectors were stationed with the units as practical during the phase down. Because of simultaneous inactivation of several units, in different geographical locations, it was impractical to move the Control Center to all areas as recommended.

c. Concur with all other comments. Appropriate action will be taken to initiate recommendations.

FOR THE COMMANDER:

T L Estes
1LT, AGC
for

CF: ACSFOR, DA, Washington, D.C. 20310

GPOP-DT (30 Apr 70) 2d Ind (U)
SUBJECT: Operational Report of HQ, 538th Engineer Battalion (Const) for Period Ending 30 April 1970, RCS CSFOR-65 (R2) (U)

HQ, US Army, Pacific, APO San Francisco 96558 29 JUL 70

TO: Assistant Chief of Staff for Force Development, Department of the Army, Washington, D. C. 20310

This headquarters concurs in subject report as indorsed.

FOR THE COMMANDER IN CHIEF:

D.D. CLINE
2LT, AGC
Asst AG

OPERATION BANNER STAR (U)

1. (U) Reference:

a. DA Confidential message, Subject: Instructions for the Phased Reduction of Army Forces in Thailand (U), DTG 141801Z November 1969

b. USARSUPTHAI Confidential letter of instruction(LOI), THOP-P, Subject: LOI for Operation * BANNER STAR * (U), dated 1 December 1969.

2. (C) Operation BANNER STAR includes all force reductions to be accomplished within USARSUPTHAI between 1 December 1969 and 30 June 1970. The above references provided the guidance and instructions for the units to be inactivated, redeployed and reduced in strength during Operation BANNER STAR. The 538th Engineer Battalion (Construction)'s assigned standdown date was 1 April 1970 and it's inactivation date is 15 June 1970. Plans are being developed to provide a color guard detachment to retire the Battalion colors at Fort Knox, Kentucky.

3. (C) In December 1969 a control center was established at USARSUPTHAI to direct and manage the logistical aspects of Operation BANNER STAR. The BANNER STAR Control Center was a single point of contact for coordination purposes for all units to be inactivated and/or redeployed. Constant liaison with the Control Center was established by this Headquarters beginning in mid-January 1970.

4. (U) Under the provisions of the stated references, items of equipment that were determined to be nonessential to the Battalion's current mission were identified in late January and turned into supply supporting activities during March and February. Attached as Tab A is a copy of the letter of instruction pertaining to the turn in of non-mission essential equipment.

5. (U) Selected items of equipment were approved in March by the CG, USARSUPTHAI for use from 1-30 April 1970 to provide the Battalion the capability to: (a) complete certain construction projects which required either contract action or additional supplies which were not on hand but due in; and, (b) continue miscellaneous concrete construction to include the installation of sidewalks and culvert headwalls. Attached as Tab B is a list of the selected equipment to complete projects after 1 April 1970. In addition, vehicles for administrative use during standdown were identified in March. This selection was based on age or mileage/hours, or a combination of both. Twelve ¼ ton jeep, nine 3/4 ton trucks, and fifteen 2½ ton cargo trucks were used for administrative purposes by the Battalion during its standdown.

6. (U) On 30 March, the U.S. Army Depot, Thailand, was designated the Battalion's BANNER STAR Sponsor Unit. Assistance received thus far has generally been one of providing transportation for the turn in of supplies and equipment. Cooperation between the two units has been excellent.

DOWNGRADED AT 3 YEAR INTERVALS;
DECLASSIFIED AFTER 12 YEARS.
DOD DIR 5200.10

Incl 40

7. (U) Immediately upon standdown, all equipment within the Battalion, except those referenced in paragraph 5, were administratively deadlined in preparation for the technical inspection prior to the turn in to Depot for disposition, or the lateral transfer of the property to other units within Thailand as directed by the BANNER STAR Control Center. As of this reporting period 297 of the 360 major items, or 82%, have been inspected; 110 have either been turned in to Depot or laterally transferred to other USARSUPTHAI units

8. (U) On 8 April a letter was published by this Headquarters notifying the companies to turn in the balance of the TOE equipment (Tab C). Since standdown, 2135 individual items have been turned in out of 2,800. Presently, 71% of the property book pages have been zeroed out. It is anticipated that all of the property will be turned in prior to 25 May at which time the records will be audited.

9. (U) In coordination with USARSUPTHAI, a projection of personnel requirements during standdown has been developed to assist in an orderly and systematic transfer or rotation of personnel between now and 15 June.

10. (U) Lessons Learned.

a. BANNER STAR LOI (Reference 1b).

(1) OBSERVATION: The original USARSUPTHAI BANNER STAR LOI authorized the turn in of equipment only after the designated standdown date.

(2) EVALUATION: In early January it became questionable as to whether or not the LOI permitted a sufficient period of time for the turn in of all Battalion equipment. Verbal authorization was obtained from the BANNER STAR Control Center to identify and turn in equipment not essential to the Battalion's current mission. This procedure was followed and it permitted the turn in of a large number of supplies prior to standdown which assisted in the overall turn in operation by, in effect, extending the turn in period to 120 days.

(3) RECOMMENDATION: Operations similar to BANNER STAR should include the authorization for the turn in of non-mission essential equipment prior to the unit's designated standdown date.

b. BANNER STAR Coordination Procedures:

(1) OBSERVATION: Most of the coordination for the equipment turn in from this Battalion was accomplished with the equipment receiving facilities at the U.S. Army Depot, Thailand, co-located with this Battalion at Sattahip

(2) EVALUATION: The need for a more readily available coordination point at the HQ, USARSUPTHAI level for inquiries, and suggestions for

procedural improvement became apparent during the early stages of Operation BANNER STAR. Due to the many activities involved in the operation, much time has been spent in ascertaining procedures of preparation and turn in of equipment. This would not be necessary if all activities involved were aware of and used a single focal point for discussion coordination, and decision-making to better advantage. The USARSUPTHAI BANNER STAR Control Center in Korat was effective but was not used to the fullest advantage, due primarily to the geographic separation.

(3) RECOMMENDATIONS: BANNER STAR units should be made more aware of the coordinating influence available at Operation Control Centers. In addition, written guidance should be published by the coordinating office as changes occur in order to avoid confusion over modified and changed procedures. At least part of the USARSUPTHAI BANNER STAR Control Center personnel should be physically located in the immediate vicinity of the BANNER STAR unit and the receiving facilities whenever possible.

c. Depot MCA Turn-in Capability:

(1) OBSERVATION: During the past month of April 1970, the turn in of MCA supplies to the U.S. Army Depot, Thailand became more difficult.

(2) EVALUATION: Due to the backlog in the Receiving Section at UBAD, Thailand, it became increasingly difficult to maintain a constant flow of turn-ins. Numerous turn-ins were not accepted when available because the Receiving Section was not able to handle the volume of items.

(3) RECOMMENDATION: In order to meet the increased rate of turn-ins during operations of the nature of BANNER STAR, four recommendations are offered:

(a) Receiving Section lengthen it's working hours

(b) The section be reinforced

(c) Work two shifts if appropriate, and

(d) Utilize more open storage areas when applicable

d. Phasing of Equipment Turn-in:

(1) OBSERVATION: Turn-in of equipment has been accomplished by phasing.

(2) EVALUATION: In conjunction with the expanded authorized period of time for turn-in of equipment, phasing was used to regulate equipment processing. In the Battalion's Phase I and II (non-mission essential equipment), equipment was identified and turned in from the units of the Battalion as it was prepared. Phase III (Post-standdown) was oriented toward turning in like items of equipment by company. The increased control was needed due to the large amount of equipment to be turned in under Phase III.

(3) RECOMMENDATIONS: The procedures described above have worked well within this Battalion and might be recommended to other BANNER STAR type units.

f. Preparation for Increase in Paperwork

(1) OBSERVATION: Operation BANNER STAR resulted in a greatly increased load of documentation preparation and manipulation.

(2) EVALUATION: It has become apparent that extra care and strict adherence to systematic procedures are necessary to insure proper processing and disposition of documentation required for equipment turn-in on a large scale. Much confusion and delay is avoided by increased supervision and regular checks of the paper work system.

(3) RECOMMENDATIONS: Units engaged in Operation BANNER STAR should be cautioned in the original guidance to take time in planning to insure that their existing system is adequate to handle the large increase in volume. Such preparation should eliminate or reduce the necessity for hurried expansion and modification.

Tabs:

A. Ltr, Hq 538th Engr Bn (Const), THCON-ASM, SUBJECT: Operation BANNER STAR, 26 Jan 70 (U).

B. Ltr, Hq 538th Engr Bn (Const), THCON-AADM, SUBJECT: Use of Selected Equipment to Complete Projects After 1 April 70, dated 25 Mar 70 (U).

C. Ltr, Hq 538th Engr Bn (Const), THCON, ASM, SUBJECT: Phase III Operation BANNER STAR, 8 Apr 70 (U).

DEPARTMENT OF THE ARMY CW2 Snowden/sm/2546
Headquarters, 538th Engineer Battalion (Construction)
APO San Francisco 96232

THCON-ASM 26 January 1970

SUBJECT: Operation Banner Star

SEE DISTRIBUTION:

1. Items of equipment listed in Inclosure 1 and 2 have been determined as non-mission essential and will be turned into supply supporting activities.

2. To accomplish the turn-ins in an orderly, efficient, and timely manner the following actions will be taken:

a. Items of equipment listed in Phase I (Inclosure 1) will have all required maintenance performed and will be prepared for turn-in at the earliest possible time but not later than 7 Feb 70. The Property Book Officer will arrange for a technical inspection and notify units of date, time and location for turn ins.

b. Items of equipment listed in Phase II (Inclosure 2) will be immediately administratively deadlined. A technical inspection will be performed by organizational maintenance personnel. Required organizational maintenance will be initiated and all required repair parts will be requisitioned not later than 7 Feb 70.

(1) All items of equipment will be brought to Condition Readiness Code "B" or better where possible. When all required organizational maintenance has been performed and equipment meets Condition Readiness Code "B" or higher, the unit will notify the property book officer that the equipment is ready for turn-in. The property book officer will arrange for a technical inspection and notify unit of date and time to have equipment available. Upon completion of the technical inspection the equipment will be turned in to appropriate supply supporting activities by S4 representatives.

(2) Items of equipment requiring maintenance above organizational level will be forwarded to the supporting maintenance activity when all organizational maintenance has been performed. Upon return of equipment to unit, turn-ins will be accomplished as stated in paragraph 2b(1) above.

Tab A

THCON-ASM 26 January 1970
SUBJECT: Operation Banner Star

(3) Items of equipment that do not meet criteria as required for Condition Readiness Code "B" or better will be processed for turn-in to appropriate supply support activity in accordance with Condition Readiness Code assigned by maintenance support activity. Units will request turn-in of these items of equipment on DA Form 3122 with classification forms attached. The property book officer will arrange for a turn-in appointment and notify unit of date, time and location.

(4) Sets, kits and outfits will be inventoried, technically inspected for serviceability of components, required organizational maintenance performed and prepared for turn-in. When ready for turn-in units will request turn-in on DA Form 3122 for sets, kits and outfits that are 100 percent complete and serviceable. Sets, kits and outfits which are incomplete and/or partially unserviceable will be prepared for turn-in by components. Components will be tagged with FSN, nomenclature, and serviceability information. A request for turn-in will be submitted on DA Form 3161 for serviceable and unserviceable components. A technical inspection will be arranged and units will be notified of date, time and turn-in instructions.

3. Due to type and quantity of vehicles available within the property section, units will be required to furnish transportation for movement of certain equipment to turn-in destination, upon notification by property book officer.

4. For additional information or instructions pertaining to Banner Star contact the property book officer. Direct coordination is encouraged between the companies and the PBO.

FOR THE COMMANDER:

Richard H. Rowe

RICHARD H. ROWE
1LT, CE
Adjutant

3 Incl:
1. Phase I Equip Listing
2. Phase II Equip Listing
3. Phase III Equip Listing & Instr (TBP)

DISTRIBUTION:

5 ea - S3
25 ea - S4
10 ea - Company

BANNER STAR
PHASE I ITEMS OF EQUIPMENT

	Hq	A	B	C	D
Adapter Piledriver 10 ton crane		1			
Adapter, Piledriver lead 40 ton		2			
Antenna AT-984/G	4	1	4	4	5
Bag water sterial 36 gal		1	2	2	1
Ball wrecking 3 ton		1			
Book set machinist		1			
Blanket, set bed	2				
Block-Tackle 20 ton, 3/4 wire				3	3
Book set combat, Group	1		1	1	1
Bottle vacuum 1 quart	4				
Bucket Dragline 3/4 cu yd		1			
Cabinet, tool spare parts	1			2	2
Cable telephone WD-1/TT on RL 159	7	2	2	2	2
Capwood Pile for 3000 lb.		4			
Case field office machine	15	6	3	3	3
Catwalk, piledriver, telescope		2		1	
Chain assembly 5/8 x 16'	8	12	11	8	10
Charger radiac detector	3	2	2	2	2
Compass magnetic, unmtd.	6	2	2	2	2
Computer Air navigation type	2				
Cook set, field 5 man		3	5	5	5
Cutter X-Ray film corner H/O	1				
Decontaminating apparatus port	28	26	52	52	52
Desk field plywood	8	4	6	6	9
Detector kit chemical	1	2	4	4	4
Dispensing pump: 12 gal		1	1	1	1
Fair lead attachment crane shovel 40 ton		1			
Field visible index book unit				3	
Flag red cross ambulance	1				
Flashlights		10			23
Food container rectangular		4	5	2	3
Forced entry & rescue equip.	1				
Goggles sun/wind/dust	13	45	48	50	48
Grid Radiographic 10 by 12	1				
Hammer Pile driver 3000 lb		3		2	2
Hammer piledriver, self		1			
Heater immersion liquid fuel		12	12	12	
Holder radiographic film	1				
Lead section, lower, piledriver		2			
Lead section, Top piledriver 15'		4			
Life preserver acft crew	4				
Life preserver B-7	10				
Light, surgical port battery	1				
Litter field aluminum pole	5				
Mounter & demounter pneutire		1			

BANNER STAR
PHASE I ITEMS OF EQUIPMENT

	Hq	A	B	C	D
Panel marker aerial liason	8	10	14	14	13
Planimeter, polar graduated	1				
Reeling machine cable RL-31		1	1	1	1
Reeling machine cable hand	1				
Safe field				1	
Screen latrine	1	1			
Shaking machine lab slide	1				
Shovel front crane crwlr 2 cu yd.		1			
Sling carrying universal load	18		32	25	
Spray, insect hand	1	1	1	1	1
Switchboard telephone manual		1	1	1	1
Table folding	31	19	7	10	10
Tank fabric collapsible 1500 gal	6				
Tank unit liquid		1			
Tarpaulin		2			
Tent liner	3	1	1	1	1
Transit pocket, clinometer	8		9	9	9
Trunk locker plywood	11				
Vestibule, tent	3	2	1	1	1

BANNER STAR
PHASE II ITEMS OF EQUIPMENT

	Hq	A	B	C	D
Accessory Outfit Gasoline		1	2		
Antenna Group AN/GRA-50	2	1	1	1	1
Barber kit w/case			1		1
Boom jib crane		1			
Demolition, equipment set			4	3	4
Detecting set, mine		1	1	1	1
Crane-Shovel Basic Unit 40 ton		1			
Drafting Duplicating set				1	1
Driver, Projective Unit	2				
Gen. Set 1.5 KW AC.	3	4	1	1	3
Gen. Set 1.5 KW DC.	1	1	1	1	1
Gen. Set 3 KW AC.	1	1			
Gen. Set 3 KW DC.	2	2			
Gen. Set 5 KW		2	2	5	
Gen. Set 10 KW	1		1	1	1
Interpretation kit photographic	1				
Inverter vibrator PP-68/U	1		1	1	1
Kettle heating bitumen		1			
Light set, Gen Illumination		2		2	2
Light Set, Marker emergency	1				
Light set, Operational area	1				
Medical, Instrument & Supply Set	1				
Medical Supply Set field	1				
Melter asphalt skid mtd		1			
Multimeter, AN/URM-105	1		1	1	1
Multimeter, TS-352B/U	1	2			
Power supply, PP-2953/U	2				
Public Address set	2				
Pump centrif, Gas driven	1				
Pump Centrif sump pneu drvn			2	2	2
Pump, Reciprocating power driven			3		1
Pumping assembly flammable lig.		1			
Radiac set AN/PDR-27	3				
Radiac moter IM/93/UD	5	6	8	11	4
Radiacmeter IM/174/PD	4	3	4	4	4
Radio Set AN/GRR-5	1		1	1	1
Radio Set AN/VRC 46	2				
Radio Set AN/VRC 47	2				
Radio Set Control Group	1				
Range Outfit field		3	3	3	3
Kit, tentage repair				1	
Repeater telephone TA-287/6	2				
Reproduction set DIAZO proces	1				
Roller, road mtzd 10 ton 3 wl		2			1
Saw chain gas driven			2	2	
Scraper earth moving towed			2	2	2
Semi-trailor repair parts shop van		2			
Sign painting set	1				

Incl 2 to Tab A

BANNER STAR
PHASE II ITEMS OF EQUIPMENT

	Hq	A	B	C	D
Splicing kit, telephone cable	1				
Splint set telescopic splints	2				
Spreader, Aggregate towed, pneu		4			
Supplementary equipment maint.		1			
Surgical Instrument and supply	1				
Sweeper rotary towed		1			
Tableware, outfit field		1	1	1	
Tamper piston hammer			4	2	
Tank & Pump unit liquid	1	2			
Telephone set TA-312/PT	5				
Teletypewriter set	1				
Teletypewriter set AN/PGC-1	1				
Tent Frame Maintenance		5	1	1	1
Tent General Purpose Med.	2	1	1	1	1
Tent General Purpose Small	3	2	1	1	1
Tent kitchen flyproof		1	1	1	1
Tent vehicle maintenance			1	1	1
Test set asphalt	1				
Test set electron tube			1	1	1
Test set radio AN/VRM-1	1		1	1	
Tool kit TE-33		1	1	1	
Tool kit auto Gen. mech		10	9		26
Tool kit carpenter Engr Sq.	1		3	3	
Tool kit, electricians #1.	1				
Tool kit electric set #2.		1	4	7	
Tool kit pipefitter Sup.	1		3	6	
Tool kit, electric equip	1		1		
Tool kit, rigger wire rope			4	4	4
Tool kit, service refri	1				
Tool kit, sheet metal			2	2	
Tool outfit pioneer portable				1	
Trailer, Cargo ¼ ton	5		3	3	4
Trailer, Cargo 3/4 ton	5	1	2	2	2
Trailer, Cargo 1½ ton	6	5	4	4	4
Trailer, Flat bed, 10 ton		1			
Trailer, Lowboy, 8 ton		1			
Trailer, Tank, water 1½ ton			1		
Trainer, Telegraphic code	1				
Truck, Ambulance, 3/4 ton	1				
Truck, Cargo 2½ ton				2	
Truck, Tractor 5 ton 6x6		1			
Truck, Tractor 10 ton		4	3	2	2
Vibrator Concrete Pneu			1	3	2
Watch, Wrist	2	5	5	5	3
Water purification equip	2				
Water quality control set	2				

DEPARTMENT OF THE ARMY
Headquarters, 538th Engineer Battalion (Construction)
APO San Francisco 96232

THCON-AADM 25 March 1970

SUBJECT: Use of Selected Equipment to Complete Projects After 1 April 1970

SEE DISTRIBUTION

1. Selected items of equipment currently included within the resources of this Battalion have been approved by the Commanding General, USARSUPTHAI, for use from 1 April 1970 through 30 April 1970 to provide the Battalion the capability to: (a) complete certain construction projects which require either contract action or additional supplies which are not currently available but are due-in; and, (b) continue miscellaneous concrete construction to include installation of sidewalks and culvert headwalls, and stabilization of drainage ditches.

2. The items of equipment approved for use are listed in Inclosure 1 to include the appropriate companies that will maintain these items through 30 April 1970.

FOR THE COMMANDER:

Peter Nils Baylor

PETER NILS BAYLOR
1LT, CE
Adjutant

1 Incl
as

DISTRIBUTION:
B

Tab B

EQUIPMENT REQUIRED TO COMPLETE

SELECTED PROJECT CONSTRUCTION AFTER 14 APRIL 1970

NOMENCLATURE	TOTAL AMOUNT REQUIRED	AMOUNT REQUIRED BY COMPANY A	B	C	D
Air Compressor 250 Cfm	1	1			
Carpenter set squad	3		1	1	1
Chain jack	1		1		
Climbers set	2		1	1	
Concrete mixer 16s	3		1	1	1
Crane trk mtd 20T	1				1
Earth auger w/2½T trk	1	1			
Electricians Set #1	2		1	1	
Electricians Set #2	2		1	1	
Front Loader	3	1		1	1
General Mech Tool Set	3		1	1	1
Gradall	1	1			
Hammer Sledge 10 lb	9		3	3	3
Mason's Set	3		1	1	1
Pick	9		3	3	3
Pipefitter's Set	2		1	1	
Pipefitter's supplement	1			1	
Shovel long handle	9		3	3	3
Truck 5T Dump	6		2	2	2
Water Distributor 1200 gal	1	1			
Welder	1	1			

Incl 1 to Tab B

DEPARTMENT OF THE ARMY CW2 Koobel/sm/984-2546
Headquarters, 538th Engineer Battalion (Construction)
APO San Francisco 96232

THCON-ASM 8 April 1970

SUBJECT: Phase III Operation Banner Star

SEE DISTRIBUTION

1. The attached listing, Inclosure 3, represents the remaining equipment within each company for turn-in under Phase III, Operation Banner Star.

2. Companies will be notified by the PBO on a weekly basis as to what items of equipment will be turned in.

FOR THE COMMANDER:

PETER HILS TAYLOR
1LT, CE
Adjutant

1 Incl
as

DISTRIBUTION:

5 ea - S3
25 ea - S4
10 ea - Company

Tab C

TOTAL ON BOOKS		HQ	A	B	C	D
1	Adding-Subtracting machine	1				
1	Auger Earth		1			
1	Barber kit				1	
884	Bayonet Knife w/scabbard	151	181	184	184	184
33	Bipod Rifle 7.62mm	9	6	6	6	6
1	Boom Crane Crlr Mtd 30' 10T					1
1	Boom Crane Crawler Mtd 50' 40 ton		1			
2	Boom Extension middle 10' 20 ton		1			1
4	Bucket Clamshell 3/4 cu yd Cap		1	1		2
2	Bucket Dragline 3/4 cu yd Cap				1	1
4	Cabinet Tool Spare Parts		2	2		
1	Camera Set Graflex	1				
1	Cleaner Steam Pressure		1			
1	Clock Message Center	1				
1	Compressor Recip 15 CFM		1			
5	Compressor Recip 5 CFM	1	1	1	1	1
2	Compressor Rotary		1	1		
1	Crane Shovel Crwler 12½T		1			
1	Crane Shovel Crwler 40T		1			
1	Crane Shovel Truck Mtd 20T					1
2	Distributor Bituminous		2			
11	Distributor Water Tank		2	2	4	3
1	Ditching machine		1			
1	Drafting Duplicating Set			1		
2	Drafting set Battalion	2				
1	Dryer Photographic EL-5	1				
1	Driver Projectile Unit			1		
1	Fairlead Roller & Sheave 12½ ton		1			
12	File visible index book unit	2		8	2	
11	File visible index cabinet		4	2	3	2
1	Flag National	1				
1	Flag Organizational	1				
26	Floodlight 3 S4		2	5	8	8
2	Genr set 1.5 KW 60 CY			2		
2	Genr set 3 KW 60 CY			1	1	
2	Genr set 3 KW DC		1	1		
9	Genr set 5 KW		1	5	2	1
5	Genr set 10 KW	2		1	1	1
49	Goggles sun/wind/dust			3	33	13
14	Grader Road Mtzd		3	3	4	4
4	Guidon	1		1	1	1
16	Launcher Rocket 3.5 in	1		4	4	4
2	Lettering set 1 S4	1				
2	Light set gen illum 2 S4					
6	Loader Scoop 2½ yards		3		1	2
6	Lubrication & Serv Unit		2	2	1	1

TOTAL ON BOOKS		HQ	A	B	C	D
28	Machine Gun 7.62mm	4	6	6	6	6
11	Mixer concrete 1 3rd Shop			3	3	4
28	Mount Tri Pod M.G.	4	6	6	6	6
1	Photographic set Printing & Prosl					
28	Pistol Auto Cal 45	24	1	1	1	1
3	Pneumatic Tool & Comp outfit		1	2		
1	Public Address set AN/PIQ-1	1				
6	Pump Centrf Sump			2	2	2
1	Pump Recip L/T 809th					
4	Radiacmeter IM 174/PD	1	1		2	
1	Reproduction set ammonia Processl					
874	Rifle 7.62mm M-14	144	181	183	183	183
5	Roller Towed Pneu Tired			1	2	2
4	Roller Towed 4 Tires		1	1	1	1
4	Roller Towed Sheepfoot			2	1	1
6	Safe field	4		1		1
23	Scraper Earth moving towed			7	10	6
14	Semi Trailer 25 ton		3	4	4	3
1	Semi Trailer 12 ton		1			
1	Semi Trailer Repair Parts		1			
5	Shop Equipment Set Contact Maint		3	1	1	
1	Shop Equipment Set Gen Purp		1			
1	Shop Equipment Org Repair		1			
5	Shop Equipment Set Wood Working			2	1	2
1	Spray Outfit Paint			2		
2	Survey Set G. P	2				
2	Sweeper Rotary		2			
2	Switchboard SB 22	2				
2	Tagline Crane 1 cu yd		1			1
2	Tamper Piston			2		
7	Telephone set TA-312/PT	7				
5	Tool kit Auto Maint #1 Common	1	1	1	1	1
5	Tool kit Auto Maint #1 Supplemen-t	1	1	1	1	1
126	Tool kit Auto Mechanic GM.	5	55	23	23	20
16	Tool kit Carpenter Engr Sqd			3	7	6
6	Tool kit Electricians #1			2	2	2
22	Tool kit Electricians #2			8	4	10
12	Tool kit Mason & Concrete			4	4	4
6	Tool kit Pioneer Eng Rlt #2			2	2	2
10	Tool kit Pipefitter Sup			4	1	5
5	Tool kit Pipefitter Sup			2	1	2
2	Tool kit Sheet Metal					2
5	Tool kit Small Arms Repair	1	1	1	1	1
8	Tool kit Tool outfit pioneer Ptbl			3	2	3
3	Torch outfit cutting			1	1	1

TOTAL ON BOOKS		HQ	A	B	C	D
6	Tractor Full Tracked w/scarfier				3	3
10	Tractor Full Tracked w/ripper		1	5	2	2
25	Tractor 290 MS			8	11	6
9	Trailer ¼ ton		4	3	2	
4	Trailer 3/4 ton		2	1	1	
4	Trailer 1½ ton				3	1
1	Trailer Tank Water				1	
1	Truck Ambulance 3/4 ton	1				
25	Truck 3/4 ton	4	6	3	5	7
38	Truck 2½ ton	12	9	4	6	7
25	Truck Dump 5 ton		7	6	7	5
2	Truck Lift Fork DSL RT	2				
1	Truck Lift wheeled mech		1			
2	Truck Pipeline const		2			
13	Truck Truck Tank Fuel		2	3	4	4
3	Truck Tractor 5 ton		3			
2	Truck Tractor 10 ton		2			
18	Truck Tractor 10 ton		2	4	7	5
19	Truck ¼ ton	9	2	3	4	1
3	Truck Wrecker 5 ton		2		1	
21	Typewriter Non-Portable	6	4	3	4	2
1	Typewriter Non-Portable 15" Carr					1
1	Typewriter Non-Portable 18-19 Carr			1		
1	Vibrator Concrete Pneu				1	
5	Welding Shop Cargo		2	1	1	1
28	Wheel Barrow Mtl			6	12	11
5	Wrench Torque 3/4" Sq		2	1	1	
903	Mask Protective Field	161	191	185	184	184

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